

POKROVSKIY, Georgiy Iosifovich; MORALEVICH, Yuriy Aleksandrovich;
ZVONKOV, V.V., zasl. deyatel' nauki i tekhniki, nauchnyy
red.; LIVANOV, A., red.; SHLENSKAYA, M., tekhn. red.

[To the forefront of a bold dream] Na perednii krai smeloi
mechty. Moskva, Molodaya gvardiya, 1962. 207 p.

(MIRA 16:4.)

1. Chlen-korrespondent Akademii nauk SSSR (for Zvonkov).
(Science) (Technology).

BORIN, A.B.; PRESNYAKOV, A.G.; LIVANOV, A.K., red.; PROZOROVA, I.Ye.,
tekhn. red.

[Club of young inventors] Klub molodykh izobretatelei; sbornik.
Moskva, Izd-vo "Molodaia gvardiia," 1962. 415 p. (MIRA 16:7)

(Technological innovations)

MALAKHOV, Anatoliy Alekseyevich; LIVANOV, A., red.; MIKHAYLOVSKAYA, N.,
tekh. red.

[The hundred occupations of a geologist] Sto professii geol-
loga. Moskva, Molodaia gvardiia, 1963. 189 p.

(MIRA 16:5)

(Geology)

KOBRINSKIY, Natan Yefimovich; PEKELIS, Viktor Davidovich;
LIVANOV, A., red.; YEGOROVA, I., tekhn. red.

[Faster than thought] Bystree mysli. Moskva, Molodaia
gvardiia, 1963. 469 p. (MIRA 16:11)
(Cybernetics)

MALAKHOV, Anatoliy Alekseyevich, prof., doktor geol.-miner. nauk;
LIVANOV, A., red.; MIKHAYLOVSKAYA, N., tekhn. red.

[Under the mantle] Pod pokrovom mantii. Moskva, Molodshia
gvardiia, 1964. 207 p. (MIRA 17:3)

AZERNIKOV, V.; ARLAZOROV, M.; ARSKIY, F.; BAKANOV, S.; BELOUSOV, I.;
BILENKIN, D.; VATEL', I.; VLADIMIROV, L.; GUSHCHEV, S.;
YELAGIN, V.; YERESHKO, F.; ZHURBINA, S.; KAZARNOVSKAYA, G.;
KALININ, Yu.; KELER, V.; KONOVALOV, B.; KREYNDLIN, Yu.;
LEBEDEV, L.; PODGORODNIKOV, M.; RABINOVICH, I.; REPIN, L.;
SMOLYAN, G.; TITARENKO, V.; TOPILINA, T.; FEDCHENKO, V.;
EYDEL'MAN, N.; EMME, A.; NAUMOV, F.; YAKOVLEV, N.;
MIKHAYLOV, K., nauchn. red.; LIVANOV, A., red.

[Little stories about the great cosmos] Malen'kie rasskazy o
bol'shom Kosmose. Izd.2., Moskva, Molodaia gvardiia, 1964.
368 p. (MIRA 18:4)

BEL'KOVICH, Vsevolod Mikhaylovich; KLEYNENBERG, Sergey Yevgen'yevich;
YABLOKOV, Aleksey Vladimirovich; LIVANOV, A., red.

[Mystery of the ocean] Zagadka okeana. Moskva, Molodaia
gvardiia, 1965. 174 p. (MIRA 18:12)

ABDULIN, A.; ALEKSEYEV, I.; BANTLE, O.; BOBROV, L.; BOZHANOV, B.;
BOYKO, V.; BONDAREV, K.; BORZOV, V.; VERKHOVSKIY, N.; GUBAREV, V.;
GUSHCHEV, S.; DEBABOV, V.; DIKS, R.; DMITRIYEV, A.; ZHIGAREV, A.;
ZEL'DOVICH, Ya.; ZUBKOV, B.; IRININ, A.; IORDANSKIY, A.;
KITAYGORODSKIY, P.; KLYUYEV, Ye.; KLYACHKO, V.; KOVALEVSKIY, V.;
KNORRE, Ye.; KONSTANTINOVSKIY, M.; LADIN, V.; LITVIN-SEDOY, M.;
MALEVANCHIK, B.; MANICHEV, G.; MEDVEDEV, Yu.; MEL'NIKOV, I.;
MUSLIN, Ye.; NATARIUS Ya.; NEYFAKH, A.; NIKOLAYEV, G.; NOVOMEYSKIY, A.;
OL'SHANSKIY, N.; OS'MIN, S.; PODOL'NYI, R.; RAKHMANOV, N.; REPIN, L.;
RESHETOV, Yu.; RYBCHINSKIY, Yu.; SVOREN', R.; SIFOROV, V.; SOKOL'SKIY, A.;
SPITSYN, V.; TEREKHOV, V.; TEPOV, L.; KHAR'KOVSKIY, A.; CHERNYAYEV, I.;
SHAROL', L.; SHIBANOV, A.; SHIBNEV, V.; SHUTKIN, N.; SHCHUKIN, O.;
EL'SHANSKIY, I.; YUR'YEV, A.; IVANOV, N.; LIVANOV, A.; FEDCHENKO, V.;
DANIN, D., red.

[Eureka] Evrika. Moskva, Molodaia gvardiia, 1964. 278 p.
(MIRA 18:3)

LIVANOV, A.A.; BELYAKOV, A.F., tekhn.red.; NADZINSKAYA, A.A., tekhn.red.

[Presses for consecutive and multiple punching of holes] Pressy
dlia posledovatel'noi i gruppovoi probivki otverstii. Moskva,
TSentr.biuro tekhn.informatsii, 1959. 61 p. (MIRA 13:11)
(Punching machinery)

L 42820-66 EWT(m)/EWP(w)/I/EWP(t)ETI/EWP(k) IJP(c) JD/HW

ACC NR: AP6028720

SOURCE CODE: UR/0122/66/000/008/0064/0065

AUTHOR: Khorev, A. I. (Candidate of technical sciences); Livanov, A. A. (Engineer)

ORG: none

TITLE: Increasing the strength of VT15 titanium alloy containers by low temperature thermomechanical treatment

SOURCE: Vestnik mashinostroyeniya, no. 8, 1966, 64-65

TOPIC TAGS: durability, cold rolling, metal tube, mechanical heat treatment, titanium alloy, aluminum containing alloy, molybdenum containing alloy, chromium containing alloy, titanium alloy tube/VT15 titanium alloy

ABSTRACT: The effect of low temperature thermomechanical treatment (LTMT) on the mechanical properties of VT15 titanium alloy (3.02% aluminum, 7.58% molybdenum, 10.8% chromium) has been investigated. Alloy billets were extruded into tubes 110 mm in diameter with 10 mm wall thickness, which were water quenched or air cooled, machined to a wall thickness of 1.8—4.0 mm, and subjected to LTMT, i.e., cross rolled at room temperature with 30—70% reduction to a wall thickness of 1.2 mm, and aged at 480C for 5 hr + 560C for 15 min. It was found that cold rolling alone (without aging) increased considerably the alloy strength. For instance, cold rolling with 60% reduction increased the respective strength of air-cooled and water-quenched specimens from 84 and 87 kg/mm² to 132 and 149 kg/mm², but at the same time lowered ductility

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UDC: 621.786.79:669.295

L 42820-66

ACC NR: AP6028720

from 24 and 26% to 6.5 and 7%. Subsequent aging increased the strength of air-cooled tubes rolled with 60% reduction to 141 kg/mm² at an elongation of 4.0%. These tubes failed in hydrostatic tests in a partially brittle manner under a pressure of 380 atm, which corresponds to a burst strength of 165 kg/mm² compared to 115 for "as-air cooled" tubes. Optimal strength and ductility are obtained by cold rolling with 30—50% reduction followed by aging. This treatment yielded tubes which failed in a ductile manner at a burst strength of 147—158 kg/mm². Aging also eliminated the residual stresses. Strips cut from the aged tubes remained straight, while strips cut from unaged tubes were distorted to a considerable degree. Orig. art. has: 1 figure.

[TD]

SUB CODE: 11, 13/ SUBM DATE: none/ATD PRESS: 5066

Card 2/2

LIVANOV, A. K.

Controlmeasuring and automatically regulating apparatus for gas pipes
Moskva, Izd-vo Ministerstva kommunal'nogo khozinstva RSFSR, 1952.
226 p. (53-25648)

TP754.L5

SOV/118-58-1-10/16

AUTHORS: Belozertsev, V.Ye., Candidate of Technical Sciences and
Livanov, A.P., Engineer

TITLE: The Taking Out of Timber in Mountains Using Trucks of the
Type MAZ-501 With Trailers (Vyvozka lesa v gorakh avtomobilyami MAZ-501 s pritsepami)

PERIODICAL: Mekhanizatsiya trudoyemkikh i tyazhelykh rabot, 1958, Nr 1,
pp 33-35 (USSR)

ABSTRACT: The Pkhiinskiy lesopunkt Psebaynskogo lespromkhoza Upravleniya lesdrevproma Krasnodarskogo sovnarkhoza (the Pkhiinskiy Wood Cutting Area of the Psebay^{sky} Lespromkhoz of the Lesdrevprom Administration Within the Kradnodar Sovnarkhoz) was supplied in May 1956 with powerful trucks of the type MAZ-501, of high roadability. The wood cutting area is located in an alpine district. These trucks with biaxial trailers have proved to be highly efficient in taking out timber. In 1956 every MAZ-501 truck with trailer transported 11,200 cu m of timber. After a run of 15 - 30,000 km, the inspection showed that the trucks were in a satisfactory technical condition; no broken frames were observed. Using the MAZ-501 trucks with 2-R-15 trailers in mountainous districts, the work-

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SOV/118-58-1-10/16

The Taking Out of Timber in Mountains Using Trucks of the Type MAZ-501

ing capacity is double and the operating expenses are three times as low as those of single trucks without trailers. There are 2 drawings.

1. Wood industry--USSR
 2. Wood--Handling
 3. Cargo vehicles
- Performance

Card 2/2

LIVANOV, A. P.

Operating the MAZ-501 logging trucks. Avt. transp. 36 no.9:21-22

S '58.

(MIRA 11:10)

(Motortrucks) (Lumber--Transportation)

LIVANOV, A.; BURLAK, A.

Semitrailer for lumber transportation. Avt. transp. 41 no.9:
41-42 S '63. (MIRA 16:10)

LIVANOV, A.P.; PIKUSHOV, A.N.

Exhaust braking of a motor vehicle with a four-cycle diesel engine. Avt. prom. 30 no.6:7-10 Je '64. (MIRA 17:12)

1. Tsentral'nyy nauchno-issledovatel'skiy institut mekhanizatsii i energetiki lesnoy promyshlennosti, Kavkazskiy filial.

LIVANOV, Aleksandr Pavlovich; POSPELOV, Yuriy Andreyevich; SOFRONOV,
Aleksandr Vladimirovich; PRASOLOV, B.A., red.; PLESKO, Ye.P.,
red.izd-va; AKOPOVA, V.M., tekhn. red.

[Organization of fuel and lubrication service at logging
camps] Organizatsiia goriuche-smazochnogo khoziaistva v les-
promkhozakh. Moskva, Goslesbumizdat, 1963. 199 p.

(MIRA 16:12)

(Motor fuels) (Lubrication and lubricants)

L 25716-66 EWT(d)/EWP(h)/EWP(1)

ACC NR: AP6004213 (A) SOURCE CODE: UR/0331/65/000/010/0009/0011

AUTHOR: Marchenko, N. D.; Livanov, A.P.; Kononenko, M. P.; Mushta, V.F. Soshnikov, A.A.

ORG: (Marchenko, Livanov, Kononenko, Mushta) Caucasus Branch TsNIIME
(Kavkazskiy filial TsNIIME); (Soshnikov) Khar'kov Tractor Plant
(Khar'kovskiy traktorny zavod) 25 B

TITLE: New wheeled tractor for hauling trees 14

SOURCE: Lesnaya promyshlennost', no. 10, 1965, 9-11

TOPIC TAGS: tractor, towing vehicle, forestry

ABSTRACT: The authors describe a four-wheel tractor constructed by the above-mentioned organizations for experimental forest hauling purposes. The new vehicle was built on the basis of a tractor of the regular T-125 type and was designed for hauling trees with top ends suspended. The tractor can be used in connection with timber carriages or log trailers up to 20 tons at speeds up to 29 km/hr. The tractors can also be equipped with a bulldozer. The vehicle is driven by a 130-hp, 1700-rpm, six-cylinder diesel engine of SMD-462 type. It is 6200 mm long, 2310 mm wide and 2600 mm high. The weight is 8000 kg. The pull 2

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UDC: 634.0.377.4

L 25716-66

ACC NR: AP6004213

of its hoister is 4500 kg. (It is proposed to increase the pull up to 7250 kg). Various tractor operating speeds and tractions were tabulated and some other data (fuel consumption, tires, etc.) were given. The timber hoist apparatus was of TDT-40 type mounted on the rear frame of the trailer. The arrangement and operation of the hoister were explained. The new tractor was tested in the forestries located in various mountainous regions of the Caucasus. Comparative tests with caterpillar tractors of TDT-60 type were organized. The tests were conducted under various conditions including snow-covered areas, steep grades, rough roads, etc. The tests were briefly described proving the higher operational speed of wheeled tractors. In general, it was proven that wheeled tractors of a 3-ton capacity could be used in mountains on grades up to 20 degrees. The tests will be continued. Orig. art. has: 2 photos showing the tractor in operation.

SUB CODE: 13/14 SUBM DATE: None / ORIG REF: 000 / OTH REF: 000

Card 2/2 *lo*

ACC NR: ~~AP5023260~~

(A)

SOURCE CODE: UR/0113/64/000/006/0007/0010

AP7002457

AUTHOR: Livanov, A. P.; Pikushov, A. N.

ORG: Kavkaz Branch, Central Scientific Research Institute of Mechanization and Power Engineering for Forest Industry (Tsentral'nyy nauchno-issledovatel'skiy institut mekhanizatsii i energetiki lesnoy promyshlennosti (Kavkazskiy filial))

TITLE: Exhaust braking in four-cycle diesel vehicles

SOURCE: Avtomobil'naya promyshlennost', no. 6, 1964, 7-10

TOPIC TAGS: brakes, vehicle ^{power transmission} ~~auxiliary~~ system, ~~motor vehicle~~ *special purpose truck, diesel engine, internal combustion engine component / Tatra-111R truck*

ABSTRACT: To increase the effectiveness of deceleration of heavy four-cycle diesel trucks intended for travel on mountain roads, the exhaust braking system is investigated. In this system, the motor exhaust is covered whenever braking action is desired. The increased pressure in the cylinders and the exhaust system (the fuel is not supplied to the motor at this time) increases the braking action. The effectiveness of this system was tested at the Kavkaz Branch of TsNIIME (Kavkazskiy filial TsNIIME) in 1961 and 1962 on the Tatra-111R 10 ton, V-12 cylinder, four-cycle diesel truck. Its maximum power is 180 hp at 1800 rpm. The test results of deceleration with and without the use of exhaust braking system are tabulated. The effectiveness of the exhaust braking system is such that the deceleration effect is approximately equivalent to shifting down by one gear. Orig. art. has: 7 formulas, 1 table, and 6 figures.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 003

Card 1/1

UDC: 621.43.06:62-59

LIVANOV, G.A.

Effect of a block of central cholinergic synaptic systems on the resistance of the cerebral cortex to asphyxia and ischemia. Biul. eksp. biol. i med. 56 no.11:47-51 O [i.s. N] '63. (MIRA 17:11)

1. Iz kafedry fakul'tetskoy khirurgii (zav. - prof. V.I. Kolesov) i Leningradskogo meditsinskogo instituta imeni Pavlova i gruppy farmakologii tsentral'noy nervnoy sistemy (rukovoditel' P.P. Denisenko) ot-dela farmakologii (zav. - deystvitel'nyy chlen AMN SSSR prof. S.V. Anichkov) Instituta eksperimental'noy meditsiny AMN SSSR.

LIVANOV, I.

Towns that have not been on the map. Block agit.vod.transp. no.14:
33-42 J1'56. (MIRA 9:9)
(Europe, Eastern--Industries) (Europe, Eastern--Cities and towns)

10.6300

28250 S/124/61/000/007/014/044
A052/A101

AUTHOR: Livanov, K. K.

TITLE: The stability of a clamped panel in a supersonic flow

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 7, 1961, 21, abstract 7B131
("Inzhenernyy sb.", no. 25, 1959, 101-103)

TEXT: The behavior of eigenvalues of the problem of flutter of a rectangular panel, clamped along its entire contour, moving in a gas with the supersonic velocity is investigated by the Galerkin method. The investigation is carried out with an allowance for the excess pressure forces exerted by gas using the law of flat sections. The characteristic determinant is investigated, and numerical examples showing the practical convergence of approximations of the Galerkin method are given.

From the summary

[Abstracter's note: Complete translation]

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26134

S/040/61/025/004/013/021
D274/D306

24.4200
AUTHOR:

1327, also 2607, 2807

Livanov, K.K. (Moscow)

TITLE:

Axisymmetric oscillations of freely hinged cylindrical shells

PERIODICAL:

Prikladnaya matematika i mekhanika, v. 25, no. 4, 1961, 742-745

TEXT: Axisymmetric oscillations of cylindrical shells are investigated by means of displacement functions; for these, expressions are found which give all the eigenfunctions of the boundary-value problem. The frequencies and forms of oscillations are investigated, first taking into account all the inertia forces, and then, for a wide range of values of the dimensionless curvature, only the normal components of inertia forces are taken into account. A comparison of results shows that the frequency calculated without taking into account tangential components of inertia forces, is near to the lowest frequency for small values of the curvature only. It is shown that predominantly transverse oscillations do not always

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D274/D306

Axisymmetric oscillations...

have a frequency which is close to that calculated by neglecting tangential forces. The equations for the oscillations are adopted from V.Z. Vlasov (Ref. 4: Obshchaya teoriya obolochek (General Theory of Shells), Gostekhnizdat, 1949). The displacement function $\Phi(\alpha)$ is introduced:

$$u(\alpha) = \delta n (c \Phi'' - v \Phi'), \quad w(\alpha) = \Phi'' - \Omega^2 n^2 \Phi \quad (2.1)$$

where α is the coordinate related to the length of the shell.

$\delta = a/nR$ is the dimensionless curvature, $c = h^2/12a^2$. The equations for stresses and moments, as well as the boundary conditions are set up. The equation for the frequencies of the freely hinged shell is

$$\Omega^4 + [\pi^2 + \delta^2 + cn^2(\pi^4 + \delta^4)]\Omega^2 + \pi^2\delta^2(1 - v^2) + cn^2(1 - \delta^2 n^2 c)\pi^6 + \pi^2\delta^4 - 2\delta^2 v \pi^4 = 0 \quad (2.8)$$

whence 4 frequencies are obtained. For $\delta = 0$, $\Omega_1 = \sqrt{c}\pi^2 n$, $\Omega_2 = \pi$. The expressions for the displacements are obtained. Further, tangential inertia components are neglected in the calculations. In that case Eq. (2.8) reduces to

$$\Omega^2 + \delta^2(1 - v^2) + n^2 c (\delta^4 + \pi^4 - 2\delta^2 v \pi^2 - \pi^4 \delta^2 n^2 c) = 0 \quad (3.5)$$

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S/040/61/025/004/013/021

D274/D306

Axisymmetric oscillations...

The frequency determined by Eq. (3.5) is denoted by Ω^- . For $\delta \neq 0$, this frequency coincides with Ω_1 , which is the lowest frequency. The dependence of frequency Ω on curvature δ is plotted on a figure. It is evident from the figure that Ω^- is near to Ω_1 for small values of δ only ($\delta < 2$). For large δ , the frequency of predominantly transverse oscillations was found to be much higher than that of predominantly longitudinal oscillations. There are 2 figures and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

SUBMITTED: April 28, 1961

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L 10731-63

EWT(m)/EVP(r)/BDS AFFTC/APCO EM

ACCESSION NR: AP3000718

S/0258/63/003/002/0322/0330

AUTHOR: Livanov, K. K. (Moscow)

TITLE: Axisymmetrical vibration of cylindrical shells in ratios

SOURCE: Inzhenernyy zhurnal, v. 3, no. 2, 1963, 322-330

TOPIC TAGS: symmetrical shell vibration, asymmetrical shell vibration, gas-flow vibration, vacuum vibration

ABSTRACT: A method for investigating the axially symmetrical vibrations of a cylindrical shell in a supersonic gas flow along its longitudinal axis is given. The method furnishes an exact solution in the case when inertia forces due to all displacement components are taken into account. The V. Z. Vlasov system of differential equations in axial and normal displacements describing the axisymmetrical vibrations of a cylindrical shell is used as the starting point. The expressions taken from the piston theory in linear formulation are substituted for the axial and normal aerodynamic forces in these equations. The general solution of these equations and the formulas for the forces and moments are given in terms of a displacement function. The boundary conditions for various types of shell support are examined by the use of linear differential operators. Outlines are given for the procedure in obtaining a general equation connecting

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ACCESSION NR: AP3000718

the parameters of a shell vibrating in a gas flow (frequency, gas velocity, damping, shell curvature, thickness, and Poisson ratio), as well as for the method of solving this equation by successive approximations. Simplification is attained by setting the gas-flow velocity equal to zero (a case of a shell in quiet gas or in vacuum). It is shown that under certain boundary conditions the vibrations of the shell decompose into symmetrical and nonsymmetrical ones. Formulas for their natural frequencies are derived, and the lower frequencies are computed for a shell simply supported at the ends and for a shell with free edges. The lower frequencies are given in a table for various length-to-radius ratios. Symmetrical and asymmetrical vibrations (in a quiet gas) of a continuous cylindrical shell on three supports are also discussed. The sequence in the analysis of vibration of a cylindrical shell in a gas flow is outlined, and the difference in values of a certain pre-flutter gas velocity calculated on the computer "Strela" by an exact method (machine time 30 min), and by an approximate (Galerkin's) method (machine time 30 sec) is shown in a table for various length-to-radius ratios. Orig. art. has: 19 formulas and 1 table.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics, AN SSSR)

SUBMITTED: 30Jul62

DATE ACQ: 21Jun63

ENCL: 00

SUB CODE: AP

NO REF SOV: 007

OTHER: 000

Card 2/2rk/14

ACCESSION NR: AT4039437

S/2879/64/000/000/0641/0645

AUTHOR: Livanov, K. K. (Moscow)

TITLE: Axisymmetrical vibrations of cylindrical shells in a supersonic gas flow

SOURCE: Vsesoyuznaya konferentsiya po teorii obolochek i plastin. 4th, Yerevan, 1962. Teoriya obolochek i plastin (Theory of plates and films); trudy* konferentsii, 1964, 641-645

TOPIC TAGS: shell, cylindrical shell, shell vibration, axisymmetrical vibration, gas flow, supersonic gas flow, damping, hinged shell

ABSTRACT: A method is presented for the investigation of the axisymmetrical oscillations of a cylindrical shell. This method permits an exact solution with allowance for the inertial forces from all displacements. The vibrations are described by the following equations:

$$\frac{\partial^2 u}{\partial x^2} + \frac{\nu}{R} \frac{\partial w}{\partial x} - \frac{h^2}{12R} \frac{\partial^3 w}{\partial x^3} + \frac{1-\nu^2}{Eh} X = 0, \quad (1)$$

$$\frac{\nu}{R} \frac{\partial u}{\partial x} - \frac{h^2}{12R} \frac{\partial^3 u}{\partial x^3} + \frac{h^2}{12} \frac{\partial^4 w}{\partial x^4} + \left(\frac{h^2}{12R^4} + \frac{1}{R^2} \right) w - \frac{1-\nu^2}{Eh} Z = 0.$$

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thickness and radius of the cylindrical shell; E, ν are Young's modulus and the Poisson coefficient of the material of the shell; and x is a coordinate along the generatrix of the shell cylinder. For the aerodynamic forces the author gives

$$X = -\mu h \frac{\partial^2 u}{\partial t^2}, \quad Z = -\mu h \frac{\partial^2 w}{\partial t^2} + B \left(C \frac{\partial w}{\partial x} - \frac{\partial w}{\partial t} \right). \quad (2)$$

where μ is the density of the material of the shell; $B = p_0 \chi / C_0$ is the damping factor; and p_0, χ, C_0 are the pressure, polytropic curve index and speed of sound in an unperturbed gas. The dimensionless coordinate $\alpha = x/a$ is introduced, where a = the length of the shell. System (1) is transformed to take on the form

$$\begin{aligned} \left(\frac{d^2}{d\alpha^2} - \Omega^2 c \right) u + \delta \left(\nu \frac{d}{d\alpha} - c \frac{d^3}{d\alpha^3} \right) w &= 0, \\ \frac{\delta}{c} \left(\nu \frac{d}{d\alpha} - c \frac{d^3}{d\alpha^3} \right) u + \left(\frac{d^4}{d\alpha^4} - A \frac{d}{d\alpha} + \Omega^2 + K\Omega + \delta^4 + \frac{\delta^3}{c} \right) w &= 0. \end{aligned} \quad (3)$$

Here the dimensionless oscillation frequency Ω , flow speed A , damping factor K , shell

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curvature δ and thickness characteristic c are introduced by the formulas

$$\Omega^2 = \frac{12(1-\nu^2)a^4\mu}{Ek^3} \omega^2, \quad A = \frac{12(1-\nu^2)a^3B}{Ek^3} C, \quad (4)$$

$$K = \frac{a^2}{h^2} \sqrt{\frac{12(1-\nu^2)}{\mu E}} B, \quad \delta = \frac{a}{R}, \quad c = \frac{h^2}{12a^3}.$$

It is proven that the first equation of the previous system is identically satisfied, while the second takes the form

$$(1-\delta^2 c)\phi^{VI} + (2\delta^2 \nu - \Omega^2 c)\phi^{IV} - A\phi'' + \left(\Omega^2 + K\Omega + \delta^4 + \frac{\delta^2(1-\nu^2)}{c}\right)\phi'' +$$

$$+ A\Omega^2 c\phi' - \Omega^2 c\left(\Omega^2 + K\Omega + \delta^4 + \frac{\delta^2}{c}\right)\phi = 0. \quad (5)$$

where $\phi(\infty)$ is the displacement function. The solution of equation (5) is sought in the form $\phi = e^{Zx}$. For Z the following equation is obtained

$$(1-\delta^2 c)Z^6 + (2\delta^2 \nu - \Omega^2 c)Z^4 - AZ^2 + \left(\Omega^2 + K\Omega + \delta^4 + \frac{\delta^2(1-\nu^2)}{c}\right)Z^2 +$$

$$+ A\Omega^2 cZ - \Omega^2 c\left(\Omega^2 + K\Omega + \delta^4 + \frac{\delta^2}{c}\right) = 0. \quad (6)$$

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Assuming that the roots $z_1, \dots, z_6$ of equation (6) are simple, a general solution of equation (5) is found in the form of $\phi = c_1 e^{z_1 x} + \dots + c_6 e^{z_6 x}$. The following characteristic determinant is compiled, which holds if the roots of Eq. (6) are simple

$$\Delta = \begin{vmatrix} L_1(z_1) & \dots & L_1(z_6) \\ L_2(z_1) & \dots & L_2(z_6) \\ L_3(z_1) & \dots & L_3(z_6) \\ R_1(z_1) e^{z_1 x} & \dots & R_1(z_6) e^{z_6 x} \\ R_2(z_1) e^{z_1 x} & \dots & R_2(z_6) e^{z_6 x} \\ R_3(z_1) e^{z_1 x} & \dots & R_3(z_6) e^{z_6 x} \end{vmatrix} = 0 \quad (7)$$

Here $L_k(z)$ and $R_k(z)$ are polynomials obtained from operators L_k and R_k . For multiple roots of Eq. (6), the characteristic determinant will have another form. However, it is possible to avoid the consideration of numerous instances of different multiplicities by

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ACCESSION NR: AT4039437

by examining the equation

$$\frac{\Delta}{\sigma} = 0,$$

(8)

where σ is the Wandermont determinant, compiled from the values $z_1 \dots, z_6$. The aggregate of equations (6) and (8) is called the basic characteristic system. Equation (6) gives the roots of the characteristic polynomial as the functions of the parameters of the problem. By substituting these functions in (8) in place of $z_1 \dots z_6$, the equation $\Delta(\Omega, A, K, \delta, c, \nu) = 0$ is obtained. This equation provides the relationship between the parameters of a shell oscillating in a stream. If the shell is oscillating in a void or in a gas at rest, this equation can be written in an explicit form, since in this case Eq. (6) becomes bicubic. When $A \neq 0$, it is possible to calculate the values of the function for any aggregate of parameter values in the following manner: assigning the values of the parameters, the coefficients of Eq. (6) are found and its roots are calculated; substituting the values of the roots in the lefthand portion of Eq. (8), the value of the function Δ is found for any aggregate of parameter values. By fixing in Eq. $\Delta = 0$ all the parameters, except the first, an equation is obtained for the frequencies of a given shell in a given flow of gas. It is illustrated in the article how this is accomplished numerically. In view of the unwieldiness of the computations, it

Cord 5/6

ACCESSION NR: AT4039437

is expedient to make the calculations on a high-speed computer. The results of such a computation (using the "Strela" computer) are discussed in the article. It was assumed that the shell in the gas flow was supported at the edges on hinges moveable in the axial direction. Orig. art. has: 1 figure and 10 formulas.

ASSOCIATION: none

SUBMITTED: 00

SUB CODE: AS

DATE ACQ: 14May64

NO REF SOV: 005

ENCL: 00

OTHER: 000

Card 6/8

L 27852-65

ACCESSION NR: AP5006169

S/0258/65/005/001/0186/0189

AUTHOR: Livanov, K. C. (Moscow)

5
28

TITLE: A comparison of certain frequency equations obtained by using the law of plane sections and the exact linearized theory

SOURCE: Inzhenernyy zhurnal, v. 5, no. 1, 1965, 186-189

TOPIC TAGS: oscillatory strip motion, divergence velocity, cantilever strip oscillation, divergence Mach number

ABSTRACT: Two exact solutions of the problem of oscillatory motion of a rigid, infinitely long, cantilever strip, elastically clamped along its length, in a supersonic stream of gas flowing on both sides of the strip in the direction of the width of the strip are compared. One solution by A. A. Il'yushin was obtained by applying the piston theory; the other, by Ye. A. Krasil'shchikova and by J. W. Miles, was derived by using exact linearized theory. The expressions for time-variable pressure distribution are critically compared, the formulas for the divergence velocity derived from these expressions are analyzed, and the divergence behavior of the strip is discussed. An approximate comparative examination of frequency equations in both solutions is also carried out, with the result that at

Card 1/2

L 27852-65

0

ACCESSION NR: AP5006169

high hypersonic velocities the values of the critical (divergence) Mach numbers obtained for both solutions are close to each other. Some conclusions are drawn on the range of applicability of the linearized theory. Orig. art. has: 3 figures and 11 formulas. [VK]

ASSOCIATION: none

SUBMITTED: 15Apr64

ENCL: 00

SUE CODE: AS

NO REF SOV: 002

OTHER: 001

ATD PRESS: 3193

Card 2/2

L 7070-66 EWT(d)/EWT(m)/EWP(w)/EWP(v)/T-2/EWP(k)/EWA(h)/ETC(m) WW/EM
ACC NR: AP5026698 SOURCE CODE: UR/0258/85/005/005/0996/0999

AUTHOR: Livanov, K. K. (Moscow)

ORG: None

TITLE: Vibrations of a cylindrical shell filled with gas

SOURCE: Inzhenernyy zhurnal, v. 4, no. 5, 1965, 996-999

TOPIC TAGS: spacecraft capsule, vibration analysis, Poisson coefficient, Young modulus, wave equation

ABSTRACT: The article considers an infinitely thin cylindrical shell filled with gas; the constant pressure on the outside of the shell is equal to the pressure of the unperturbed gas inside the shell. It is assumed that the shell and the gas perform common axisymmetrical vibrations, and that transfers do not depend on the coordinates along the length of the shell. The following equation may then be employed to describe such vibrations:

$$\left[\frac{w}{R^2} + \frac{1-\nu^2}{Eh} \left(\mu h \frac{d^2 w}{dt^2} + \rho_s \frac{\partial \Phi}{\partial t} \right) \right]_{r=R} = 0. \quad (1.1)$$

Card 1/2

UDC:533.601.342

L 7070-66

ACC NR: AP5026698

Here $w(t)$ is the normal deflection of the shell; R and h are the radius and the thickness of the shell; E , ν , and μ are the Young modulus, the Poisson coefficient and the density of the shell material; ρ_0 is the density of the unperturbed gas inside the shell; $\Phi(r, t)$ is the velocity potential of the gas, obeying the wave equation

$$\frac{\partial^2 \Phi}{\partial r^2} + \frac{1}{r} \frac{\partial \Phi}{\partial r} - \frac{1}{c_0^2} \frac{\partial^2 \Phi}{\partial t^2} = 0. \quad (1.2)$$

Here r is a coordinate calculated along the radius; c_0 is the velocity of sound in the unperturbed gas. On the wall of the cylinder ($r=R$) the normal velocity of the gas must coincide with the velocity of the wall, that is,

$$\left. \frac{dw}{dt} = \frac{\partial \Phi}{\partial r} \right|_{r=R} \quad (1.3)$$

A solution of the problem is given by the methods of matrix mathematics. Orig. art. has: 9 formulas and 2 figures

SUB CODE:AS,SV/ SUBM DATE: 05Mar64/ ORIG REF: 006/ OTH REF: 001

nw

Card 2/2

LIVANOV K. V.

USSR/Cultivable Plants - Grains.

M-2

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10733

Author : Livanov, K. V.

Inst : Krasnokutsk Selection Station.

Title : /Pasynkovaniye/ Corn in the Zavolzh'ya.

Orig Pub : S. Kh. Povolzh'ya, 1957, No 5, 45-46

Abstract : North Dakota corn was [pasynkovaniye] on the Krasnokutsk Selection Station. In plantings of one cornstalk per nest the yield of ears corn cobs fell from 7.2 to 5.7 centners per hectare; with two plants in a nest the yields were the same; and with three the yield increased from 5.3 to 6.5 centners per hectare. An experiment with [pasynkovaniye] of the southern variety (Krasnodarskaya ryadovaya) gave negative results.

Card 1/1

LIVANOV, K.V., kand.sel'skokhozyaystvennykh nauk

Cultivation of durum and strong wheats in the trans-Volga region.
Zemledelie 6 no.12: 31-37 D '58. (MIRA 11:12)
(Volga Valley--Wheat)

LIVANOV, Konstantin Vital'yevich , kand. sel'khoz. nauk; DOLINSKIY, N.M.,
red.; DEYEVA, V.M., tekhn. red.; ZUBRILINA, Z.P., tekhn. red.

[Forage crops in the trans-Volga region] Kormovye kul'tury v Za-
volzh'e. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1959. 189 p.
(MIRA 14:7)

(Volga Valley—Forage plants)

LIVANOV, K.V.; TARVIS, T.V.

Sorghum in arid areas of the Southeast. Zemledelie 7 no.2:71-75
F '59. (MIRA 12:3)

1. Krasnokutskaya gosudarstvennaya selektsionnaya stantsiya.
(Sorghum)

LIVANOV, K.K. (Moskva)

Stability of a jammed panel in a supersonic flow. Insh. sbor.
25:101-103 '59. (MIRA 13:2)
(Airfoils)

L 1975-66 ENT(d)/ENT(1)/ENT(m)/EWP(w)/EWA(d)/EWP(t)/EWP(b) IJP(c) JD/JG/EM/GH
 ACCESSION NR: AP5021260 UR/0293/65/003/004/0659/0660
 629.198.624

AUTHOR: Livanov, L. B. 44,55

TITLE: Comparison of the effect of meteoroid impact on various metal surfaces

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 4, 1965, 659-660

TOPIC TAGS: ^{44,55}meteoroid, ⁷¹meteoroid impact, meteoroid metal interaction, light metal interaction, heavy metal interaction

ABSTRACT: The effect of the impact of an iron spherical meteoroid on plates of lithium, beryllium, magnesium, aluminum, titanium, and iron has been computed using a formula (derived by K. P. Stanyukovich) for the dependence of the crater depth resulting from the meteoroid explosion on a metallic surface and the meteoroid parameters. A comparison of the value of K_p (a criterion proportional to the weight in kg of a metallic obstacle 1 meter square pierced by a meteoroid, if its diameter d is expressed in mm and its density ρ in g/cm^3) showed the advantages of light metals, which have low melting temperatures but a higher specific heat of melting (Q) and evaporation (Q), over heavier metals, which are heat resistant but generally have lower values of C and Q . At impact velocities of 6.7 and 30 km/sec, the

Card 1/2

L 1975-66

ACCESSION NR: AP5021260

respective calculated values of K_p were: 9.65—11.45 and 9.2—10.9 for Li, 6.67—9.2 and 11.6—15.55 for Be, 11.9—15.9 and 16.45—22.1 for Mg, 13.4—18.75 and 15.8—22.1 for Al, 13.6—20.2 and 18.4—27.4 for Ti, and 17.9—28.2 and 24.9—39.5 for Fe. The results confirm the previously established advantages of a Mg-base alloy containing 13--14% Li and 6% Al. Orig. art. has: 2 tables and 1 formula. [MS]

ASSOCIATION: none

SUBMITTED: 08Jan65

ENCL: 00

SUB CODE: MM, AA

NO REF SOV: 001

OTHER: 003

ATT PRESS: 4090

Card 2/2 *DP*

L 29955-66

ACC NR: AF60.12479

SOURCE CODE: UR/0181/66/008/004/1165/1167

AUTHOR: Gil'fanov, F. Z.; Livanova, L. D.; Stolov, A. L.

ORG: Kazan' State University in. V. I. Ulyanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Investigations of trigonal $\text{CaF}_2:\text{Gd}^{3+}$ centers with hydroxyl compensation

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1165-1167

TOPIC TAGS: calcium fluoride, activated crystal, optic center, crystal, luminescence spectrum, optic transition, line splitting, Stark effect, GADOLINIUM COMPOUND

ABSTRACT: The authors point out that previously produced crystals with OH^- centers were subject to various defects which led to erroneous results. In the present investigation they obtained single crystals with single symmetry due to OH^- compensation, with good optical properties. The $\text{CaF}_2 + \text{Gd}_2\text{O}_3$ crystals were grown from the melt in an induction furnace by the dropping crucible method in a vacuum of 2×10^{-4} mm Hg. The crystals grown under such conditions contained in addition to centers with fluorine compensation, also oxygen trigonal centers. The OH^- centers were produced by introducing KOH or NaOH in the charge. Analysis of the field constants, obtained by the EPR method, showed that the OH^- centers obtained in these crystals were identical with those observed by J. Sierro (J. Chem. Phys. v. 34, 2183, 1961). The luminescence spectra of the Gd^{3+} in the OH^- centers were measured at room temperature and at liquid-nitrogen temperature. Transitions were observed from all the Stark

Card 1/2

L 29955-66

ACC NR: AP6012479

components of the $^6P_{7/2}$ and $^6P_{5/2}$ to the ground state. The luminescence lines were narrow and their intensity exceeded somewhat the intensity of luminescence from centers of other symmetries at the same concentrations. The wave numbers and the splitting of these terms are tabulated. The possible model of the OH^- center is discussed in light of the results, and it is suggested that the OH^- ion is located in the interstices of the fifth coordination sphere, thus producing centers with a single (trigonal) symmetry. The value of the splitting can be reconciled with the relation derived by the authors earlier (FTT v. 8, 142, 1966) between the term splitting and the distance between the Gd^{3+} ion and the compensator. The authors thank V. G. Stepanov for help with the work. Orig. art. has: 1 table.

SUB CODE: 20/ SUBM DATE: 06Sep65/ ORIG REF: 001/ OTH REF: 006

Card 2/2 NP/

L 32566-66 EWP(e)/EWT(m) WH/WW

ACC NR: AP5003792 SOURCE CODE: UR/0181/66/008/001/0231/0233

AUTHORS: Zaripov, M. M.; Kropotov, V. S.; Livanova, L. D. 10

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet) B

TITLE: Electron paramagnetic resonance of Mn^{2+} ions in MgF_2

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 231-233

TOPIC TAGS: electron paramagnetic resonance, magnesium compound, manganese, paramagnetic ion, fluorine, hyperfine structure, line splitting, epr spectrum

ABSTRACT: To obtain information on the interaction between paramagnetic ions and their nearest surrounding atoms, the authors investigated crystals of magnesium fluoride doped with manganese (concentration 0.5 at. in the charge), grown in a graphite crucible by the Bridgman method at 10^{-4} mm Hg. The immediate environment of the Mg^{2+} ions consists of six fluorine ions and has a high symmetry (D_{2h}). 2

Card 1/2

L 32566-66

ACC NR: AP5003792

This symmetry could be observed on the plotted EPR spectrum of the Mn^{2+} , evidencing isomorphous replacement of the Mg^{2+} ions by the Mn^{2+} ions. A super-hyperfine structure is observed for the spectrum in a magnetic field parallel to the c axis, wherein each line of the hyperfine structure of Mn^{2+} is split into 15 components. It is deduced that out of the six fluorine atoms surrounding the Mn^{2+} ions, four are at equal distance from the central ion, and two are at a different but likewise equal distance. A formula is written out for the spin Hamiltonian describing the observed spectrum. The constants of the fine and hyperfine structures are determined by the usual procedure. The results do not agree with those obtained by M. Tinkham (Proc. Roy. Soc. v. A236, 535, 1956), and the discrepancy is attributed to errors in Tinkham's paper. Orig. art. has: 1 figure and 3 formulas.

SUB CODE: 20/ SUBM DATE: 03Jun65/ ORIG REF: 001/ OTH REF: 003

Card 2/2

82

LIVANOV, M. I.

23596.

O BYSTRYKh KOLEBANIYaKh I ELEKTROENTs EFALOGRAMMAKh I NEKOTORYKh USLOVIYa Kh, IKh
USILIVAYuShehIKh (DOKLAD I PRENIYa). V. SB: GAGRSKIYe BESEDY (PO EKSPERIM.
BIOLOGII). T. I. TBILISI, 1949, c. 301-11--BIBLIOGR: C. 307.

SO: LETOPIS' NO. 31, 1949

USSR/Human and Animal Physiology (Normal and Pathological)
Blood Circulation. Heart

T

Abs Jour: Ref Zhur-Biol , No 17, 1958, 79548.

Author : Livanov, M.I.
Inst :

Title : Electrocardiographic Investigations of Healthy
Children Aged 4 to 15 Years.

Orig Pub: Azerb. univ. Uch. zap. Azerb. un-t, 1957, No 3, 75-
82.

Abstract: Collated tables are cited of fluctuations of
average voltage (in mm) and duration (in seconds)
of ECG waves and intervals of healthy children
aged 4-7, 8-10 and 11-15 years. In healthy chil-
dren, changes of the T wave are often met in
monopolar chest records.

Card : 1/1

GUSEYNBKOV, Z.A., LIVANOV, M.I.

Study of capillary resistance in children with rheumatic fever.
Azerb.med.zhur. no.8:72-75 Ag '58 (MIRA 11:9)

1. Iz kafedry detskikh bolezney lechebno-profilakticheskogo
fakul'teta (zav. prof. Z.A. Guseynbekov) Azerbaydzhanskogo gosu-
darstvennogo meditsinskogo instituta im. N.Narimanova (direktor-
zaslyzhenny, deyatel' nauki, prof. B.A. Kyvazov.).
(RHEUMATIC FEVER)
(CAPILLARIES)

LIVANOV, M. I., Cand of Med Sci — (diss) "Data for the Study of the Electrocardiograms of both Healthy and Rheumatic Children, " Baku, 1959, 23 pp (Azerbaijani State Medical Institute im N. Narimanov) (KL, 2-60, 117)

LIVANOV, M.I.

Electrocardiographic studies with application of physical stresses to healthy children and children with rheumatic fever. Azerb.med. zhur. no.8:15-21 Ag '59. (MIRA 12:11)

1. Iz kafedry pediatrii lechebno-profilakticheskogo fakul'teta (zav. - prof.Z.A.Guseynbekov) i kafedry gospi'tal'noy terapii II (zav. - zasluzh.deyatel' nauki, prof.D.M.Abdullayev) Azerbaydzhanskogo gosudarstvennogo meditsinskogo instituta im. N.Narimanova (direktor - zasluzhennyy deyatel' nauki, prof. B.A.Byvazov).

(ELECTROCARDIOGRAPHY) (RHEUMATIC FEVER)

LIVANOV, M.I.

Preventive treatment of children with rheumatic fever, Azerb.
med. zhur. no. 2:52-55 P '61. (MIRA 14:2)
(RHEUMATIC FEVER)

LIVANOV, M.I.; KATS, P.D.

Norms of the T-wave in the electrocardiogram of children. Azerb.
med.zhur. 40 no.1:15-20 Ja '63. (MIRA 16:3)
(ELECTROCARDIOGRAPHY)

PHASE I BOOK EXPLOTTATION 769

Livanov, Mikhail Mikhailovich

Inzhenerno-geodezicheskaya s"yemka i sostavleniye ispolnitel'nykh planov promyshlennykh predpriyatiy (Engineering Surveying and the Compilation of Design Drawings for Industrial Enterprises) Moscow, Geodezizdat, 1957.

Ed.: Belikov, Ye.F.; Tech. Ed.: Botvinko, M.V.; Ed. of Publishing House: Inozemtseva, A.I.

PURPOSE: This book is written for engineer-geodesists, employed as surveyors of industrial enterprises.

COVERAGE: The book discusses methods used in surveying the area of industrial enterprises scheduled for reconstruction or expansion. Particular emphasis is put on tracing the underground power and communication lines and water pipes, and on surveying the railway and motor road networks on the territory of a particular plant. Detailed instructions are available on the sequence and coordination of routine survey jobs. The book also discusses the practices of setting out points on the ground, triangulation and polygon plotting,

Card 1/1

Engineering Surveying and the Compilation of Design Drawings (Cont.) 769

tying-in of traverses, construction of coordinate nets, and some other elements of geodetic surveying in which allowance must be made for the special conditions of industrial enterprises. Specifications for transit traverses and various computation tables are included in the books. The author does not describe the instruments used in such surveys. There are 102 figures, 29 Soviet references, and 16 tables in the appendix. The following table of contents is translated from the titles in the text.

TABLE OF CONTENTS:

Foreword

3

SECTION ONE. GENERAL INFORMATION. ORGANIZING ENGINEERING-GEODETIC OPERATIONS
FOR SURVEYING THE AREA OF AN INDUSTRIAL ENTERPRISE
AND MAKING DESIGN DRAWINGS OF IT

Ch. I. General Information

1. Basic characteristics of different types of industrial plants 5
2. Compilation of a general plan and making design drawings for an industrial enterprise 6

Card 2/11

LIVANOV, M.M., inzh.; PAVLOV, K.P., inzh., nauchnyy red.; KHLUDEYEVA,
Ye.I., red.izd-va; BOROVNEV, N.K., tekhn.red.

[Fundamentals of geodesy for construction and assembling work]
Osnovy geodesii dlia stroitel'no-montazhnykh rabot. Moskva,
Gos.izd-vo lit-ry po stroit., arkhitekt. i stroit.materialam, 1960.
352 p. (MIRA 13:11)

1. Russia (1917- R.S.F.S.R.) Glavnoye upravleniye spetsial'nogo
promyshlennogo stroitel'stva.
(Surveying) (Building)

- LIVANOV, Mikhail Mikhailovich; BELIKOV, Ye.F., dotsent, retsenzent;
SHILOV, F.Ye., inzhener-geodezist, retsenzent; LETOVAL'TSEV, I.G.,
dotsent, red.; VASIL'YEVA, V.I., red.isd-va; ROMANOVA, V.V., tekhn.red.;

[Surveying in construction] Geodeziia v stroitel'stve. Moskva,
Gosgeoltekhizdat, 1963. 312 p. (MIRA 16:6)
(Surveying)

LIVANDY, M-N. 11/

Co

PROCESSES AND PROPERTIES

The role of chemical mediators in the transmission of neural excitement. A. M. Ryabinovskaya and M. N. Livandiy. *Russ. Acad. sci. U. S. S. R. Classe sci. math. nat., Ser. biol.* 1938, 1241-8 (in English, 1248).—Analysis of the electrograms obtained under the action of acetylcholine, of adrenaline and of Bittermann's soln. (used as a standard) on the isolated frog sartorius muscle, composed of homogeneous tetanic fibers, reveals that acetylcholine manifests a tonomotor influence and adrenaline a tonotropic.

John Livak

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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LIVANOV, M. N.

11 f

PROCESSES AND PROPERTIES: 111. Alterations in the viscosity and elasticity of muscle under severe and mild stimulation. M. N. Livanov. *J. Physiol. U. S. S. R.* 25, 234-42 (in English 244) (1931).--The stimulation of muscle with an induction coil at the rate of 100 shocks/sec. (severe) gives the greatest increase in muscle viscosity. Mild stimulation causes a smaller rise, while resting muscle has the lowest viscosity. No viscosity aftereffects were observed after 1-3 min. of severe stimulation. The elasticity values of muscle are highest under mild stimulation, intermediate under severe, and lowest at rest. 1111. The glycogen consumption of muscle under severe stimulation and during fatigue. A. N. Magnitskil and R. B. Perel'man. *Ibid.* 244-8 (in English 248).--Resting muscles contain 0.08% more glycogen (I) than muscles subjected to severe stimulation for 20 min. During this period the muscle consumes 8.8% of its carbohydrate supply. Fatigue of the muscle by mild stimulation for 20 min. causes a decrease of 0.25% from the I content of resting muscle. The av. carbohydrate consumption of the muscle is 21.1%. IV. The formation of lactic acid in muscles under severe stimulation and during fatigue. A. N. Magnitskil and V. D. Turbaba. *Ibid.* 249-51 (in English, 251).--The av. lactic acid formation in muscle under severe stimulation is 44% less than that in fatigued muscle. Cf. *ibid.* 218-34 (in English, 234-5). S. A. Karjala

ASB-514 METALLURGICAL LITERATURE CLASSIFICATION

LIVANOV, M. N.

"Über die Ungleichmässige Ausbildung Verschiedener im Electroencephalogramm
Vertretener Frequenzen und über den Berger'schen Rhythmus," Zhur. Fiz., Vol. 28,
No. 3, pp 157-171, 172-182, 182-194, 1940

LIVANOV, M. N.

M. N. Livanov: "Frequency processes and mechanisms of the cortical function." (p. 9)

SO: Journal of General Biology Vol. 5, No. 1., 1944

LIVANOV, M. N., and RYABINOVSKAYA, A. M.

"On the Problem of Localization of Changes in Electrical Processes of the Brain Cortex of a Rabbit, in Determining the Protective Conditional Reflex to a Rhythmic Irritation. Zef. Zhur., Vol 33, No 5, 1947, p 523. Electrophysiology Laboratory of the Inst of Evolutionary Physiology and Pathology of Higher Nervous Activity imeni Academician I. P. Pavlov.

SO: U-4396

LIVANOV, M.N.; KOROL'KOVA, T.A.

Effect of inadequate stimulation of the skin with inducing current on bioelectric cutaneous rhythms and on conditioned reflex activity. Zh. vysshei nerv. deiat. Pavlova 1 no.3:332-346 May-June 1951. (CML 23:2)

1. Moscow.

LIVANOV, M.N.; KOROL'KOVA, T.A.; FRENKEL', G.M.

Electrophysiological examination of the higher nervous function.
Zh. vysshei nerv. deiat. Pavlova 1 no.4:521-538 July-Aug 1951.
(GLML 23:2)

LIVANOV, M.N.; KOROL'KOVA, T.A.

Electrophysiological study on disorders of the higher nervous function
in rabbits. Tr. Vsesoiuz. obsh. fiziol. no. 1:31-36 1952. (GLML 24:1)

1. Delivered 27 September 1950, Moscow.

LIVANOV, M.N.; ANAL'YEV, V.M., Moskva

Electrophysiological study of the spatial distribution of the cerebral cortex activity in rabbits. *Fiziol.shur.* 41 no.4:461-469 J1-Ag '55. (MLRA 8:10)

(CEREBRAL CORTEX, function tests,
electrophysiologic determ. of distribution of
funct. in various areas)

USSR/Human and Animal Physiology - Nervous System.
Cortex of Cerebral Hemispheres.

T-10

Abs Jour : Ref Zhur - Biol., No 7, 1958, 32142

Author : Livanov, M.N.

Inst : -

Title : Mosaic of the Bioelectrical Potentials of Large and Small Areas of the Cerebral Cortex in Rabbits.

Orig Pub : V. sb.: Probl. sovrem. fiziol. nervn. i myshechn. sistem. Tbilisi, AN GruzSSR, 1956, 141-149.

Abstract : During registration of the bioelectric activity of the cortex of a rabbit by means of 50 electrodes (interelectrode distance 1.5 mm, oscillations of potentials determined relative to the total potential of all 50 electrodes) on a bioelectric mosaic background, there were observed local independent oscillations of potentials under electrodes, synchronous changes in many points of the cortex, reciprocal relations between anterior and posterior sections of

Card 1/2

USSR/Human and Animal Physiology - Nervous System.
Cortex of Cerebral Hemispheres.

T-10

Abs Jour : Ref Zhur - Biol., No 7, 1958, 32142

the hemispheres. Sterotyped changes of the cortical mosaic are noted. Sometimes local foci of sharp negativity surrounded by a zone of positiveness appeared. The dynamics of the electric activity of small sections of the cortex (area 5.4 mm², diameter of electrodes 0.2 mm, interelectrode distance 0.1 mm) is analogous to the dynamics of large sections, but in the small sections the synchronous changes encompassing sections of 1-2 mm² are more sharply expressed. In the motor region, synchronous changes in remotely situated points of the cortex were often observed. Rhythmic light stimulations caused a local reaction in small interchanging sections of the cortex (fast components of primary response were not registered).

Card 2/2

LIVANOV, M.N., professor

Central and peripheral interrelationships in radiation sickness.
Med.rad. 1 no.1:19-27 Ja-F '56. (MLRA 9:9)

(CENTRAL NERVOUS SYSTEM, effect of radiations,
central & peripheral neural relationships in irradiated
animals (Rus))

(NERVOUS SYSTEM, effect of radiations,
same)

(RADIATIONS, effects,
on central & peripheral NS, relationships in irradiated
animals (Rus))

LIVANOV, M.M.

V-10

USSR/Human and Animal Physiology - The nervous System.

Abs Jour : Ref Zhur - Biol., No 2, 1958, 8999

Author : M.M. Livanov, V.M. Anan'ev and N.P. Bekhtereva

Inst :

Title : A Study of the Bioelectric Mosaics of the Cortex in Patients with Brain Tumors and Traumas by Means of Electroencephalography.

Orig Pub : Zhurnal nevrologii i psikiatrii, 1956, 56, No 10, 778-790

Abstract : The electrical activity of 50 points on the cerebral cortex was recorded by means of an electroencephaloscope (Livanov, Anan'ev, Fiziol. zhurnal SSSR, 1955, No 4) on a screen on which the fluctuations in potential of the corresponding point were reflected in changes in intensity of illumination. The dynamics of the illumination of the points was recorded with a motion picture camera. When the cerebral cortex of rabbits was traumatized by the subdural introduction of a piece of paraffin, there was observed the

Card 1/3

EXCERPTA MEDICA Sec 14 Vol 13/8 Radiology Aug 59

1520. THE EFFECT OF NOVOCAINE ON CERTAIN CHANGES INDUCED BY
IONIZING RADIATION IN THE NERVOUS SYSTEM OF ANIMALS (Russian
text) - Livanov M. N. and Kaburneeva L. I. - MED. RADIOL.
(Mosk.) 1958, 3/1 (9-16) Graphs 4 Illus. 2

Experiments show that there is an increase of impulses coming to the cortex which
is followed by depression of the cortical activity after total irradiation of rabbits in
the dosage of 1000 r. This depression probably reflects the condition of the thresh-
old of inhibition. Normalization of the central-peripheral relations was attempted.
Novocaine was chosen as the pharmacological agent to block the centripetal impuls-
es. The smallest dose was used that still was able to bring down the amount of im-

1520

pulses reaching the cortex to almost normal values. It was shown that novocaine had a definitely beneficial effect, not only on the condition of the cortex, but also on the survival of the irradiated animals. When the body was irradiated while the head was protected by a screen, novocaine likewise had a positive effect, this effect being absent, however, when the head was irradiated and the body protected. It is concluded that the increase of corticopetal impulses after single total irradiation constitutes one of the factors which cause radiation sickness. Novocaine decreases the pathological impulses in relatively low concentrations.

(XIV, 8)

LIVANOV, M. N.

In the Department of Biological Sciences
Vest Ak Nauk SSSR, No. 5, pp. 60-62, 1958.

30-58-5-14/36

of national economics. In his closing speech V. A. Engel'gardt Member, Academy of Sciences, USSR agreed to the remarks made by the speakers of the discussion. The plenary assembly elected a new composition of the office. Beside the Secretary V.A. Engel'gardt, Member, Academy of Sciences, USSR whose powers have not yet expired the following persons were elected: The Members, Academy of Sciences, USSR, A. L. Kursanov, Ye. N. Pavlovskiy, V. N. Sukachev, and I. V. Tyurin, as well as the Corresponding Members, Academy of Sciences, USSR E. A. Asratyan, P. A. Baranov, V. A. Kovda, Yu. A. Orlov, A. N. Svetovidov, S.Ye. Severin, G. K. Khrushchev, V. N. Chernigovskiy. The following lectures were heard: M. N. Meysel' on new directions in the fluorescence-microscopic investigation of cells, tissues and organs. B. P. Ushakov on the problem of the adaptation of the cells of cold-blooded animals to raised temperatures. M.N. Livanov on the investigation of higher nervous activity by the new electro-physiological method. M. A. Peshkov on the use of the perfected an-
optal microscope in microbiology and protistology. I. S. Beritashvili, Member, Academy of Sciences, USSR showed a popular scientific film on the investigation of the part played by the cerebral cortex of the cerebrum and cerebellum in the spatial orientation of animals.

Card 45

LEVARTY, M. H.

"The Significance Of The Brain Stem Centres And Of The Hypothalamic Region In The Development Of The Experimental Acute Radiation Disease."

report submitted for the 21st International Congress of Physiological Sciences, Buenos Aires, 9-15 Aug 1959.

LIVANOV, Mikhail Nikolayevich; ANAN'YEV, Vladimir Mikhaylovich

[Electroencephalography] Elektroentsefaloskopiia. Moskva,
Medgiz, 1959. 106 p. (MIRA 13:9)
(BRAIN--DIAGNOSIS) (ELECTROPHYSIOLOGY)

LIVANOV, M. N.

21(N): 17(0)
 PHASE I BOOK EXPLORATION
 NOV/2008
 International Conference on the Peaceful Uses of Atomic Energy, 24, Geneva, 1958
 Dobyly sovetskikh uchenykh radiobiologiya i radiatsionnaya medicina
 (Reports of Soviet Scientists; Radiobiology and Radiation Medicine)
 Moscow, Kazan Univ. po izdat'stvo atomnoy energii pri
 Gosstatizdat, 1959. 429 p. 6,000 copies printed. [Series:
 Vsesoyuznae nauchno-issledovatel'skoye po atomnoy i izotopnoy energii
 izdatel'stvo, tom 5]

General Ed.: A.V. Lebedevskiy, Corresponding Member, USSR Academy of Medical
 Sciences; Ed.: E.S. Salukovskiy, Tech. Ed.: Ye.I. Maslov.

FOREWORD: This book is intended for physicians, scientists, and engineers
 as well as for professors and students at courses where radiobiology and
 radiation medicine are taught.

CONTENTS: This is Volume 5 of a 6-volume set of reports delivered by Soviet
 scientists at the Second International Conference on the Peaceful Uses of
 Atomic Energy, held on September 1-15, 1958, in Geneva. Volume 5 contains
 13 reports edited by Candidates of Medical Sciences S.Y. Lysitskiy and V.V.
 Fedorov. The reports cover problems of the biological effects of ionizing
 radiation, future consequences of radiation in small doses, genetic effects
 of radiation, treatment of radiation sickness, uses of radioactive isotopes
 in medical and biological research, uses of atomic energy for diagnostic
 and therapeutic purposes, soil absorption of uranium fission products,
 their intake by plants, and their storage in plants and foodstuffs.
 References accompany each report.

Reports of Soviet Scientists (Cont.)

LYSENKO, M. E., and B. A. Mirnykh. Changes Appearing in the Nervous System Following the Ionizing Radiation Effect (Report No. 2315)	76
TSUKUBA, A. Y. Role of Supravital Glands in the Pathogenesis of Radiation Sickness (Report No. 2312)	95
YANUSOV, B. D. Primary Reactions in Nucleoproteins Under the Action of Ionizing Radiation (Report No. 2248)	105
BEKIS, A. M., and A. I. Shubelash. The Importance of Change in the Native State of Nucleoproteins in Radiation Injury (Report No. 2319)	110
FRANK, G. M., E. A. Alimshalova, and A. B. Isakova. Some Problems in the Bio- physical Analysis of Radiobiological Effects (Report No. 2207)	125
ARMSTRONG, R. G. Some Tissue and Cell Reactions to the Ionizing Radiation Effect (Report No. 2280)	129
ALYMECH, A. G., I. A. I., and A. E. Kabanovskiy. Electron Paramagnetic Resonance Spectra of Irradiated Amino-Acids, Peptides, Proteins, and Lyophilized Tissues (Report No. 2079)	132

LIVANOV, M.N.; KONDRAT'YEVA, I.N.

Sensitivity of the nervous system to weak radiation effects.
Med.rad. 4 no.9:3-13 S '59. (MIRA 12:11)
(NERVOUS SYSTEM radiation eff)

ANFILOV, Gleb; ASRATYAN, E.A.; GULYAYEV, P.I., doktor biol.nauk;
LIVANOV, M.N., prof.; KRAYZMER, L.P., kand.tekhn.nauk;
VASIL'YEV, L.L.; KLYATSKIN, I., kand.tekhn.nauk

Is thought transference possible? Opinions of Soviet
scientists. Znan. sila 35 no. 12:18-23 D '60. (MIRA 13:12)
(Thought transference)

LIVANOV, M.N.; TSYPIN, A.B.; TRIGOR'YEV, Yu.G.; KHRUSHCHEV, V.G.;
STEPANOV, S.M.; ANAN'YEV, V.M. (Moskva)

Effect of an electromagnetic field on the bioelectric activity
of the cerebral cortex in rabbits. Biul. eksp. biol. i med.
49 no. 63-67 My '60. (MIRA 13:12)

1. Predstavlena deystvitel'nym chlenom AMN SSSR V.V. Parinym.
(ELECTRO MAGNETIC WAVES—PHYSIOLOGICAL EFFECT)
(CEREBRAL CORTEX)

GLAZUNOV, I.S.; GUS'KOVA, A.K.; LIVANOV, M.N.

Basic regularities in the nervous system's reaction in acute
radiation sickness (survey of the literature). Zhur.nevr.i psikh.
61 no.10:1574-1578 '61. (MIRA 15:11)
(RADIATION SICKNESS) (NERVOUS SYSTEM—RADIOGRAPHY)

PHASE I BOOK EXPLOITATION SOV/6184

Livanov, Mikhail Nikolayevich

Nekotoryye problemy deystviya ioniziruyushchey radiatsii na nervnuyu sistemu
(Some Problems in the Effect of Ionizing Radiation Upon the Nervous System)
Moscow, Medgiz, 1962. 195 p. 4000 copies printed.

Ed.: S. P. Landau-Tylkina; Tech. Ed.: N. I. Lyudkovskaya.

PURPOSE: This book is intended for specialists in radiation medicine and for those interested in the effects of ionizing radiation on the nervous system.

COVERAGE: The book discusses problems of the effects of ionizing radiation on the nervous system. General topics covered include radiation sensitivity of the nervous system, the basic mechanisms of ionizing radiation effects, interaction between nerve centers in radiation sickness, the hypothalamus in radiation sickness, and the relation between organic functions and the state of the irradiated cerebral cortex. There are 404 references:

Card 1/1

LIVANOV, M. N.

" Spatial Analysis of the Bioelectric Activity of the Brain. "

Information Processing in the Nervous System, Leiden, Neth. 10-17 Sep '62

Institute of Higher Nervous Activity and Neurophysiology in Moscow

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S/247/62/012/003/001/003
1015/1215

AUTHOR: Livanov, M. N.

TITLE: Spatial analysis of the bioelectrical activity of the brain

PERIODICAL: Zhurnal vysshey deyatel'nosti, v. 12, no. 3, 1962, 399-409

TEXT: The electrotoscopic method produces an overall bioelectrical picture of the brain's surface. The present article reports the results of a study on spatial synchronism of biopotentials. The apparatus consisted of a 50-100 channel toposcope where all the leads were applied simultaneously. The results were evaluated on a computer, and distribution curves were plotted. The following zones of synchronism were found in rabbits: a) a zone of compact synchronism, where the various points of interaction are located in the same vicinity; b) zones in which synchronism exists between points distributed in space, sometimes remote from one another — the so-called distant synchronism; c) zones of complex synchronism including superposition of several synchronized zones. The phenomenon of synchronization was examined also in relation to developed conditioned reflexes and the bioelectrical activity of subcortical formations. The possible significance of this phenomenon is discussed. There are 5 figures.

ASSOCIATION: Institut vysshey nervnoy deyatel'nosti i neyrofiziologii Akademii nauk SSSR (Institute of Higher Nervous Activity and Neurophysiology, Academy of Sciences USSR) Moscow

Card 1/1

S/219/62/054/009/001/004
I015/I215

AUTHORS: Livanov, M.N., Khanina, L.M., and Kholodov, Yu. A.

TITLE: A comparative analysis of trophic disorders caused either by denervation or by single local irradiation of an intact or denervated extremity in rabbits

PERIODICAL: Byulleten' eksperimental'noy biologii i meditsiny
v.54, no. 9, 1962, 42 - 46

TEXT: This is the continuation of previous studies. In 10 rabbits a denervated extremity was irradiated with 5000r X-rays. In 8 control rabbits an intact extremity was similarly irradiated and in another 7 rabbits an extremity was denervated only. Denervation was achieved by injecting a mixture of 5ml of 0.5% novocain solution and 5ml of 96% alcohol into the sciatic nerve and

Card 1/2

S/219/62/054/009/001/004
I015/I215

A comparative analysis ...

10 ml of novocain into the muscle tendon sheath. Irradiation of a denervated extremity did not develop dystrophic processes. Trophic disorders following irradiation result from damage to the innervation caused by the ionizing radiation. The appearance of ulcera on the contralateral extremity indicates that the irradiation effect is due to its denervating activity and to another mechanism associated with reflex phenomena. There are 2 tables. ✓

SUBMITTED: October 2, 1961

Card 2/2

LIVANOV, M. N.

"Theoretical biology and its application."

report presented at the 3rd Intl Cong on Cybernetic Medicine, Naples, 21-24 Mar 64.

LIVANOV, M.N.; GAVRILOVA, N.A.; ASLANOV, A.S.

Correlations of various parts of the cerebral cortex during intellectual work. Zhur. vys. nerv. deiat. 14 no.2:185-194 Mr-Apr '64.

(MIRA 17:6)

1. Institute of Higher Nervous Activity and Neurophysiology, U.S.S.R. Academy of Sciences, Moscow.

ASRATYAN, E.A., prof., otv. red.; LIVANOV, M.N., red.; RUSINOV, V.S.,
red.; SIMONOV, P.V., red.; MESHCHERSKIY, R.M., red.;
POPOVA, Ye.I., red.

[Brain reflexes; transactions] Refleksy golovnogo mozga;
trudy. Moskva, Nauka, 1965. 646 p. (MIRA 19:1)

1. Mezhdunarodnaya konferentsiya, posvyashchennaya 100-
letiyu vykhoda v svet odnoimennogo truda I.M.Sechenova.
2. Chlen-korrespondent AN SSSR (for Asratyan).

NEPRIMEROV, N.N.; SHARAFIN, A.G.; NUZHIN, M.T., prof., otv. red.; MARKOV, M.T., prof., zastavitel' otv. red.; KASHTANOV, S.G., prof., red.; ARBUZOV, B.A., akademik, red.; AL'TSHULER, S.A., prof., red.; LIVANOV, N.A., prof., red.; NORDEN, A.P., prof., red.; PISAROV, V.I., prof., red.; TIKHVINSKAYA, Ye.I., prof., red.; BARYSHNIKOV, V.G., dots., red.; KOLESNIKOVA, Ye.A., dots., red.; KOLOBOV, N.V., dots., red.; MCROZOV, D.G., dots., red.; KHARITONOV, A.P., dots., red.; YUDIN, I.N., red.; SAMITOV, Yu.Yu., red.

[Investigations of wells and development of preventive paraffin control methods] Issledovanie skavazhiny i razrabotka preventivnykh metodov bor'by s-parafinom. Kazan' 1957. 108 p. (Kazan. Universitet. Uchenye zapiski, vol. 117, no.3). (MIRA 11:5)

1. Rektor Kazanskogo gosudarstvennogo universiteta (for Nuzhin).
 2. Prorektor po nauchnoy rabote Kazanskogo gosudarstvennogo universiteta (for Markov).
 3. Prorektor po uchebnoy rabote Kazanskogo gosudarstvennogo universiteta (for Kashtanov).
 4. Sekretar' partkoma Kazanskogo gosudarstvennogo universiteta (for Yudin).
- (Oil wells) (Petroleum engineering)

BARANOV, V.I., professor; ARBUZOV, A.Ye., akademik, glavnyy redaktor; LIVA-NOV, H.A., professor, otvetstvennyy redaktor; RASSTRIGIN, M.A., tekhnicheskiy redaktor.

[Kuligash] Kuligash. Izd-vo Kazanskogo filiala Akademii nauk SSSR, 1948. 72 p. (Akademiia nauk SSSR. Kazanskii filial, Kazan. Trudy. Seriya biologicheskikh i sel'skokhoziaistvennykh nauk, no.1)
(MLBA 10:2)

(Aktanysh District--Swamps)

LIVANOV, N. A.

"The Origin and Early Stages of Evolution of the Nervous System." (p. 385) by Livanov, N. A. (Kazan)

SO; Advances in Modern Biology (Uspekhi Sovremennoi Biologii) Vol. 16, No. 4, 1943.

LIVANOV, N.A.; PEREDEL'SKIY, A.A., redaktor; KOROLEVA, L.I., tekhnicheskiy redaktor

[Evolution of animal life; analysis of the organization of the principal types of multicellular animals] Puti evoliutsii zhirotnogo mira; analiz organizatsii glavneishikh tipov mnogo-kletochnykh zhiivotnykh. Moskva, Gos.izd-vo "Sovetskaya nauka," 1955. 398 p. (MIRA 9:3)

(Evolution) (Zoology)

LIVANOV, N.A.

"Pelagic nemertines in the Far Eastern seas of the U.S.S.R." by
V.S. Korotkevich. Reviewed by N.A. Livanov. Zool. zhur. 37 no.7:
1106-1107 J1 '58. (MIRA 11:8)
(Soviet Far East--Nemertinea)

LIVANOV, N.A.

Department of Invertebrate Zoology. Uch.zap.Kaz.un, 120 no.3:56-64
'60. (MIRA 14:6)

(Tatar A.S.S.R.—Zoological research)

LIVANOV, N.A.

Characteristics of living nature. Uch.zap.Kaz.un. 120 no.6:3-32
'60. (MIRA 16:2)
(Evolution) (Anatomy, Comparative)

LIVANOV, N.A.; PORFIR'YEVA, N.A.

"Annelid hypothesis" on the origin of Pogonophora. Zool. zhur.
44 no.2:161-168 '65. (MIRA 18:5)

1. Kazanskiy gosudarstvennyy universitet.

NEPOMNYASHCHIY, Avtonom Sergeyevich; LIVANOV, S.P., red.; TIKHONOVA,
I.M., tekhn.red.

[The city in which we live] Gorod, v kotorom my zhivem.
Lenizdat, 1958. 120 p. (MIRA 12:6)
(Leningrad--Description)

18

LIVANOV, V. A.

Investigation of Piston Forgings from AC-11 Alloy. V. A. LIVANOV
(Zovinye Metally (Non-Ferrous Metals), 1968, (1), 127-137).—[In Russian.]
From examination of the macro- and micro-structure and tensile and impact
tests, it is concluded that the best material for pistons is that produced from
rolled and pressed rods.—N. A.

ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION

12345678910111213141516171819202122232425262728293031323334353637383940414243444546474849505152535455565758596061626364656667686970717273747576777879808182838485868788899091929394959697989900

1ST AND 2ND ORDER										3RD AND 4TH ORDER									
PROCESSING AND PROPERTIES INDEX																			
LIVANOV, V. A.										2									
Thermal Treatment of AG-11 Alloy Pistons in Connection with Wearing Phenomena. V. A. Livanov (<i>Tekhnika Vozdushnogo Flota (Tech. of Air Fleet)</i>, 1966, (10), 82-96).—[In Russian.] Internal stress in a tempered piston of AG-11 alloy may be as much as 25 kg./mm.². The best heat-treatment of pistons, to obtain the optimum mechanical properties and minimum internal stress, consists in annealing in a nitro bath for 3-4 hrs. at 825°-830° C., quenching in water, ageing immediately in an electric furnace for 20-30 hrs. at 175° C., and air-cooling. Stresses are thereby reduced to a third and the alloy given the following mechanical properties: tensile strength 33-36 kg./mm.², proportionality limit 23-28 kg./mm.², elongation 7-10%, Brinell hardness 100-110, and impact strength (notched bar) 1-10-1-40 kg./cm.².—N. A.																			
ASH-11A METALLURGICAL LITERATURE CLASSIFICATION																			
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